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INTERIM STAFF REPORT ON 1970 BIKINI ATOLL ENVIRONMENTAL SURVEY

Attached is an interim report on the 1970 survey of Bikini Atoll. Included are observations on progress by Trust Territory in the rehabilitation program. The results from air sampling are considered to be final values. Data from soil sampling are not to be available until the end of November. At that time a final report of survey activities will be prepared.

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Division of Operational Safety

Enclosure:
Bikini Atoll Report

L. Joe Deal
personal files

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Interim Staff Report on 1970 Bikini Atoll Environmental Survey

A follow-up radiological survey of the major islands of Bikini Atoll, Marshall Islands, was conducted in May-June 1970, by representatives from the U. S. Atomic Energy Commission, the University of Washington, and the U. S. Public Health Service.^{1/} This survey and associated field activities included general observations of prevailing environmental conditions, the collection of environmental samples for subsequent laboratory analysis, monitoring of scrap metal collected for sale by native workers, and an experiment to evaluate possible shielding effects to be expected from use of locally obtained aggregate in housing construction.

Considerable progress by Trust Territory was observed for the agricultural portion of the rehabilitation program. The coconut tree nursery contained several thousand seedlings in various stages of growth and the job of transplanting trees into rows has been completed for much of the Island of Eneu. Planting is to start later this year on Bikini Island.

The construction of housing had not started as of June 1970 and would appear to be still some time in the future.^{2/} At the time of the team visit, there was a small Trust Territory administrative

1/ The total cost of the 1970 survey was about \$110,000. DEM provided \$17,000 for logistics support. NV provided \$30,000 for PHS travel and sample analysis and \$63,000 for University of Washington participation including program planning, transportation, equipment, salaries, and sample analysis. These contractor forces were provided from the capabilities being maintained to support AEC readiness-to-test response in the Pacific, and their costs were funded from the Readiness Program.

2/ Plans reported in March 1970 by Trust Territory officials called for initial construction of 30 houses on Bikini Island in 1970. While some equipment and building materials were observed in stockpile on nearby Eneu Island, such construction had not begun at the time of the survey. When contacted on November 5, 1970, a Trust Territory official reported that 40 houses were currently financed with completion due in 1972. The Trust Territory budget request for FY 1972 was said to contain an item of \$125,000 for construction of bathhouses and outhouses on Bikini Island.

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unit operating from the tent camp on Eneu Island that was constructed during cleanup operations. There was no camp on Bikini Island and any work done there was performed by workers brought by boat each day from Eneu Island. The work crew of more than 20 Bikinians who are participating in the agricultural rehabilitation project rotates every three months from Kili Island, the present home of the Bikini people. Because of the limited facilities on Eneu Island, workers were not allowed to bring their families to Bikini Atoll even for a three-month period. Unless this restriction is removed, the first families may not return until 1972 or later. Those working in the Atoll are experiencing problems with communications, water transportation and equipment maintenance.

Laboratory analysis of air filter samples collected over a two-week period on Eneu and Bikini has been completed. Table 1 presents data for five stations on Bikini and four on Eneu. The values listed were obtained by analyzing one half of the filter for each day composited by station over the total sampling period. The remaining half of these daily air filter samples is on file for possible future use. For comparison the Maximum Permissible Concentrations, MPC's, are included in the Table.

Details of the location of the air samplers will be presented in a later report. The only unique aspect of sampler location is for Station 1 on Bikini wherein this sampler was exposed to dust from the jeep driven by the survey team members along the lagoon road.

Table 2 presents the average value for Plutonium-239 in air at Station 1 on Bikini for each of fourteen consecutive days. The average value in the U.S. in 1968 is shown for comparison.

It was expected that results for analysis of soil samples would be available in late September or early October. It now appears these results will not be available until the latter part of November at which time a more complete report of the 1970 Bikini survey can be prepared. Included will be data on air, water, soil, aggregate, algae, rats, goat fish, lobster, coconut crab, exposure rates inside and outside bunkers and inside and outside a cistern built with local sand and aggregate in 1969, the shielding experiment, Bravo crater muck, and on urine samples for one Trust Territory resident and one team member.

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Table 1
Radioactivity in Air (pCi/m³)
Composite Samples

Station	Ce-144	Ru-106	Zr-95	Pu-238	Pu-239*
<u>Bikini</u>					
1	$.8 \times 10^{-2}$	$.8 \times 10^{-2}$	$.7 \times 10^{-2}$	$< .1 \times 10^{-4}$	5.4×10^{-4}
2	$.7 \times 10^{-2}$	$.8 \times 10^{-2}$	$.8 \times 10^{-2}$	$< .1 \times 10^{-4}$	1.1×10^{-4}
3	$.7 \times 10^{-2}$	$.9 \times 10^{-2}$	$.9 \times 10^{-2}$	$.1 \times 10^{-4}$	1.0×10^{-4}
4	$.9 \times 10^{-2}$.1	$.8 \times 10^{-2}$	$< .1 \times 10^{-4}$	$.6 \times 10^{-4}$
5	$.6 \times 10^{-2}$	$.8 \times 10^{-2}$	$.7 \times 10^{-2}$	$.1 \times 10^{-4}$	1.2×10^{-4}
<u>Eneu</u>					
1	$.8 \times 10^{-2}$	$.8 \times 10^{-2}$	$.7 \times 10^{-2}$	$.1 \times 10^{-4}$	$.4 \times 10^{-4}$
2	$.8 \times 10^{-2}$.1	$.8 \times 10^{-2}$	$.1 \times 10^{-4}$	$.4 \times 10^{-4}$
3	$.6 \times 10^{-2}$	$.8 \times 10^{-2}$	$.7 \times 10^{-2}$	$.1 \times 10^{-4}$	$.4 \times 10^{-4}$
4	$.9 \times 10^{-2}$	$.1 \times 10^{-1}$	$.7 \times 10^{-2}$	$< .1 \times 10^{-4}$	$.4 \times 10^{-4}$

MPC in Air, pCi/m³ (individuals)

	<u>Soluble</u>	<u>Insoluble</u>
Ce-144	3×10^2	2×10^2
Ru-106	3×10^3	2×10^2
Zr-95	4×10^3	1×10^3
Pu-238	7×10^{-2}	1
Pu-239	6×10^{-2}	1

*Background in U.S. in 1968 was about 0.4×10^{-4} pCi/m³. Station 1 (Bikini) was moved from upwind to downwind side of lagoon road after the second day.

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Table 2

Plutonium-239 in Air, Bikini No. 1 Daily Values* (pCi/m³)
Collection period 5/29/70 through 6/12/70

1. $< 0.7 \times 10^{-4}$	5. 5.5×10^{-4}	9. 2.5×10^{-4}	13. 2.6×10^{-4}
2. 0.7×10^{-4}	6. 4.0×10^{-4}	10. 4.8×10^{-4}	14. 4.0×10^{-4}
3. 1.2×10^{-4}	7. 7.9×10^{-4}	11. 6.1×10^{-4}	
4. 7.2×10^{-4}	8. 4.7×10^{-4}	12. 1.2×10^{-4}	

*Background in U.S. in 1968 was about 0.4×10^{-4} pCi/m³. Station was moved from upwind to downwind side of lagoon road after the second day.